

## ABSTRACT OF THE DISCLOSURE

Small particles of polymeric material are produced by expansion of a mixture of monomers and a propellant. The size and shape of the particles can be precisely tailored by materials selection and expansion conditions. Particles of 10 nanometers to 100  
5 microns can be produced. If monomers exhibiting solid state reactivity are utilized, the particles thus formed can be polymerized at any time after formation. The particles produced by this method can be molecularly imprinted by incorporating a template into the particle prior to fully curing the particle, in a manner which allows selective extraction of the template from the cured particle after formation without deformation of  
10 the imprint site. A two step polymerization process allows the particles to be deposited on and adhered to a wide variety of substrates without additional agents. The molecularly imprinted particles can be used in a wide variety of applications including the selective binding of analyte from a sample, where the analyte is the same as the template or is of substantially the same size and has a similar arrangement of chemical  
15 functional groups. Imprinted molecularly imprinted particles can be used for targeted delivery of agents in biological applications. Non-imprinted particles formed by the expansion technique using monomers of solid state reactivity can be used in optical data storage systems.